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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/788,432      | 02/27/2004  | Aaron D. Peacock     | UTR-107X            | 8113             |

23557 7590 10/17/2006

SALIWANCHIK LLOYD & SALIWANCHIK  
A PROFESSIONAL ASSOCIATION  
PO BOX 142950  
GAINESVILLE, FL 32614-2950

EXAMINER

SALMON, KATHERINE D

|          |              |
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| ART UNIT | PAPER NUMBER |
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1634

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                       |  |
|------------------------------|--------------------------------------|---------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/788,432 | <b>Applicant(s)</b><br>PEACOCK ET AL. |  |
|                              | <b>Examiner</b><br>Katherine Salmon  | <b>Art Unit</b><br>1634               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 12, 13, 15 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/10/2004</u> .  | 6) <input checked="" type="checkbox"/> Other: <u>PTO 90</u>       |

### **DETAILED ACTION**

1. An action on the merits for Claims 1-16 is set forth below.

#### ***Claim Objections***

2. Claims 4-5, 12-13, and 15-16 are objected to because of the following informalities:

With regard to Claims 4, 5, 12, and 13, "subset or microbial organisms" should be "subset of microbial of microbial organisms".

With regard to Claims 7, 8, 15, and 16, the separation of the group should be amended to be separation of each by semicolon or separation of each by a comma.

Appropriate correction is required.

With regard to Claims 8 and 16, the period on line 4 which should be removed.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-16 are indefinite. Claims 1 and 9 recite the limitation "the microbial flora" in line 2 of claim 1 and line 1 of Claim 9. There is insufficient antecedent basis for

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this limitation in the claim. It is suggested that the claim be amended to e.g. "a microbial flora" to correct the antecedent basis.

Claims 1-8 are unclear in regard to if the method is directed to a method of identifying active bioremediation pathways or a method of correlating the biomarkers with particular microbes. The preamble of Claim 1 states a method of identifying active bioremediation pathways. The last steps teach a method of correlating biomarkers with particular microbes or components of a bioremediation pathway. Therefore it is unclear if the method identifies a bioremediation pathway as claimed.

Claims 9-16 are unclear in regard to if the method is directed to identifying the microbial flora at a site or correlating biomarkers with components of a bioremediation pathway. The preamble of Claim 9 states a method of identifying the microbial flora at a site. The last steps teach a method of correlating biomarkers with particular microbes or components of a bioremediation pathway. Therefore it is unclear if the method identifies a bioremediation pathway as claimed.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Lytle et al. (Journal of Microbiological Methods Vol. 44 2001 p. 271)

With regard to Claim 1a and 9a, Lytle et al. teaches adhesion deficient gram-negative colonies were grown in a nitriloacetic acid-free basal salt medium with  $^{13}\text{C}$  isotope as the sole carbon source (p. 273 1<sup>st</sup> column 1<sup>st</sup> paragraph). Lytle et al. teaches the cells were grown in a sealed tube (solid support) (p. 273 1<sup>st</sup> column 1<sup>st</sup> paragraph).

With regard to Claim 1b and 9b, Lytle et al. teaches the cells were grown for 20 minutes, therefore the growth of the bacteria would have created a film of colonies on the solid support (p. 273 1<sup>st</sup> column 1<sup>st</sup> paragraph). With regard to Claim 1c and 9c, Lytle et al. teaches detecting of palmitic acid and oleic acid (fatty acids) (biomarkers) (Abstract). With regard to Claim 1d and 9d, Lytle et al. teaches that this detection method can be used to correlate biomarkers (palmitic acid and oleic acid) to in situ bioremediation or subsurface sediments (component of bioremediation pathway) (Abstract).

With regard to Claim 2-3 and 10-11, Lytle et al. teaches detection of phospholipids fatty acids (Table 1 p. 274). With regard to Claims 4-5 and 12-13, Lytle et al. teaches specific fatty acids can be used to trace bacteria (subset of microbial organism) (Abstract and p. 271 1<sup>st</sup> paragraph).

With regard to Claim 6 and 14, Lytle et al. teaches using  $^{13}\text{C}$  labeled bacteria (Abstract).

With regard to Claim 7 and 15, Lytle et al. teaches the sample was isolated from an aquifer site (water sample) (p. 272 last paragraph).

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With regard to Claim 8 and 16, Lytel et al. teaches performing PLFA analysis (p. 276 Results 3.2 Detection of unique negative ion of PLFA).

5. Claims 1-7, and 9-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Elasri et al. (Applied and environmental microbiology May 1999 p. 2025)

Elasri et al. teaches the response of a *P. aeruginosa* biofilm to stress by using a bioluminescent biosensor that responds to DNA damage (p. 2025 2<sup>nd</sup> column 2<sup>nd</sup> paragraph last sentence). With regard to Claim 1a and 9a, Elasri et al. teaches *P. aeruginosa* (microbial flora) cell suspension was covered with strontium chloride solution to form small beads and placed on an electrophoresis tray (solid support) (p. 2025 Materials and methods 1<sup>st</sup> paragraph and last paragraph). With regard to Claim 1b and 9b, Elasri et al. teaches incubating at room temperature (p. 2025 last paragraph). With regard to Claim 1c and 9c, Elasri et al. teaches measuring the cell count after UV exposure (p. 2026 1<sup>st</sup> column 1<sup>st</sup> full paragraph). With regard to Claim 1d and 9d, Elasri et al. teaches correlating the response of *P. aeruginosa* to UV stress (Abstract).

With regard to Claims 2-3 and 10-11, Elasri et al. teaches a method using a plasmid contains a fusion of the *recA* promoter of *P. aeruginosa* to the *luxCDABE* operon of *V. fischeri* (p. 2025 2<sup>nd</sup> column Bacterial Strain). Elasri et al. teaches that this plasmid contains the *lux* operon, which reduces flavin mononucleotide and a long fatty acid aldehyde in the presence of oxygen to emit light (p. 2025 1<sup>st</sup> column last paragraph). Elasri et al. teaches the reductase complex recycles the fatty acid allowing

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autonomous bioluminescence (p. 2025 1<sup>st</sup> column last paragraph). Therefore, the method of Elasri et al. teaches detection of light from the recycling of fatty acid. The fatty acid can therefore be considered the biomarker which is detected. Claims 4-5 and 12-13, the biomarker (the promoter of *P. aeruginosa*) is characteristic of a bacterial population (subset of microbial organisms).

With regard to Claim 6 and 14, Elasri et al. teaches using strontium, which is listed in Table 1 of the instant application (p. 2025 Materials and methods last paragraph).

With regard to Claim 7 and 15, Elasri et al. teaches using a clinical strain of *P. aeruginosa* (p. 2025 2<sup>nd</sup> column Materials and methods 1<sup>st</sup> paragraph).

6. Claims 1, and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Fathepure et al. (Applied and environmental microbiology December 1991 p. 3418).

With regard to Claim 1, Fathepure et al. teaches biodegradation of chlorinated compounds by sequential anaerobic and aerobic treatment of chlorinated compounds (p. 3418 1<sup>st</sup> column 2<sup>nd</sup> paragraph and 2<sup>nd</sup> column 2<sup>nd</sup> full paragraph). With regard to Claim 1a, Fathepure et al. teaches feeding bacteria (microbial flora) with <sup>14</sup>C-chlorinated compound in which the bacteria is in a column (solid support) (p. 3420 1<sup>st</sup> column 1<sup>st</sup> full paragraph). With regard to Claim 1b, Fathepure et al. teaches growing the biofilm for 37.5 Hours (p. 3420 2<sup>nd</sup> column last paragraph). With regard to Claim 1c, Fathepure et al. teaches measuring the conversion of <sup>14</sup>C into carbon dioxide (biomarker) (p. 3421 1<sup>st</sup> column last paragraph). With regard to Claim 1d, Fathepure et al. teaches that

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groundwater and industrial effluents composed of highly chlorinated aliphatic and aromatic hydrocarbons can be treated with a two-stage bioreactor (Abstract).

Therefore, Fathepure et al. teaches identifying a pathway of bioremediation by measuring the amount of carbon dioxide produced because the production of carbon dioxide reduces chlorinated compounds.

With regard to Claim 6, Fathepure et al. teaches a method using  $^{14}\text{C}$ , which is listed on the table.

With regard to Claim 7, Fathepure et al. teaches effluent samples (liquid) were collected (p. 3419 2<sup>nd</sup> column 1<sup>st</sup> full paragraph).

### ***Conclusion***

7. No Claims are allowed.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Salmon whose telephone number is (571) 272-3316. The examiner can normally be reached on Monday-Friday 8AM-430PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.




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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Katherine Salmon  
Examiner  
Art Unit 1634



BJ FORMAN, PH.D.  
PRIMARY EXAMINER

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10/ 788,432

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| APPLICATION NO./<br>CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR /<br>PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
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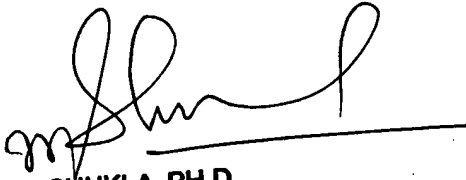
DATE MAILED:

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner for Patents**

Petition filed 2/27/2004 for color drawings was received. The petition included a fee of \$130 and 3 sets of color drawings. The specification includes a sentence in the first paragraph of the "brief description of drawings" disclosing the file contains at least one drawing executed in color. Upon review, all conditions are met. Petition is granted

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine Salmon whose telephone number is (571) 272-3316. The examiner can normally be reached on Monday-Friday 8AM-430PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**RAM R. SHUKLA, PH.D.**  
**SUPERVISORY PATENT EXAMINER**

  
Katherine Salmon  
Examiner  
Art Unit 1634